1: Neth J Med 1993 Aug;43(1-2):83-90

The role of modification of lipoproteins and of the immune system in early atherogenesis.

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Not only the plasma cholesterol level, but also postsecretory modificatior of lipoproteins appear to be of influence in atherogenesis. Evidence that several forms of modification, especially oxidation, occur in vivo is rapid accumulating, although their clinical relevance remains uncertain. Modification of lipoproteins has been demonstrated in persons with such well-known risk factors of premature atherosclerosis as smoking, diabete: mellitus and hyperlipidaemia. Because there is a relation between the amount of natural antioxidants in the plasma and the risk of atherosclerosis, and because exogenous antioxidants appear to retard atherosclerosis without influencing the plasma cholesterol level, antioxidants may prove to be of use in the prevention of atherosclerosis. There are strong indications for a role of the immune system in atherogenesis. Modified lipoproteins are highly immunogenic and stimulate immunocompetent cells to secrete vasoactive factors and cytokines. From animal studies it appears that pro- and antioxidative conditions can modulate these processes. It is concluded that additional research on the relation between lipoprotein modification and the immun system, and on the possible beneficial effects of antioxidants in atherogenesis is warranted, not only to elucidate further the mechanism o atherosclerosis, but also to develop new approaches to the prevention of atherosclerosis.

Publication Types:
- Review
- Review Literature

PMID: 8232700 [PubMed - indexed for MEDLINE]

1: Ann Biol Clin (Paris) 1992;50(4):213-27 Related Articles, Books, LinkC

[Modified LDL and atherosclerosis. Nature of modifications. Physicochemical and biological properties]

[Article in French]

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The role of plasma LDL in atherogenesis is now well established. Cholesteryl ester accumulation within macrophages leads to foam cell formation, an early atherosclerotic process. In vitro, foam cell formation scarcely ever occurs in the presence of native LDL. Modification of these lipoproteins is necessary for their binding to macrophage scavenger receptors. In vitro modifications reported have involved chemical reactions, physical mechanisms, enzymatic reactions, cellular interactions and association with macromolecules. In vivo, they can occur by glycatio or desialylation, smoking or by hemodynamic interactions. Alterations of the physicochemical properties of LDL are induced by oxidation and include an increase in their density and their net electronegative charge, changes in lecithin composition, polyunsaturated fatty acid peroxidation (lipids and apolipoprotein B100 degradation. Apolipoprotein B100 fragmentation leads to an impairment of uptake through LDL receptors, while uptake through macrophage scavenger receptors is enhanced. Modified LDL have also other particularities such as cytotoxicity, chemotactism for circulating monocytes, inhibition of resident macropha mobility, vasoconstriction, perturbation of the arachidonic acid cascade, involvement in haemostasis and immune mechanisms. Hypotheses concerning the role of modified LDL, in particular oxidized LDL, in atherogenesis open new therapeutic prospects.

Publication Types:
- Review
- Review, Academic

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